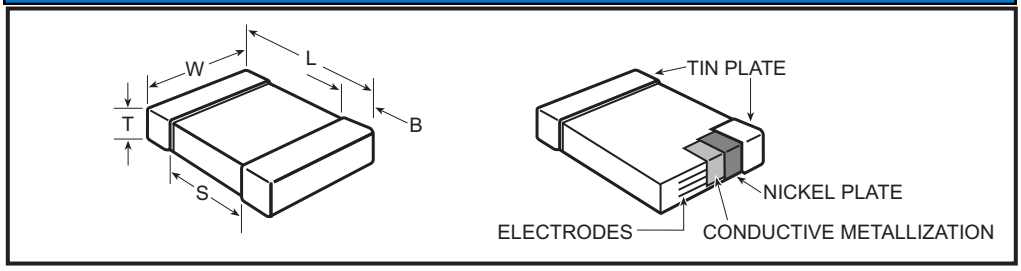
Surface Mount Ceramic Chip Capacitors – C0G Dielectric

Outline Drawing



Dimensions - Millimeters (Inches)

EIA SIZE CODE	METRIC SIZE CODE	L - LENGTH	W - WIDTH	B - BANDWIDTH	S SEPARATION minimum	MOUNTING TECHNIQUE
0402	1005	1.0 (.04) ± .05 (.002)	0.5 (.02) ± .05 (.002)	0.20 (.008) -.40 (.016)	0.3 (.012)	Solder Reflow
0603	1608	1.6 (.063) ± .15 (.006)	0.8 (.032) ± .15 (.006)	0.35 (.014) ± .15 (.006)	0.7 (.028)	Solder Wave + or Solder Reflow
0805	2012	2.0 (.079) ± .20 (.008)	1.25 (.049) ± .20 (.008)	0.50 (.02) ± .25 (.010)	0.75 (.030)	
1206	3216	3.2 (.126) ± .20 (.008)	1.6 (.063) ± .20 (.008)	0.50 (.02) ± .25 (.010)	N/A	
1210	3225	3.2 (.126) ± .20 (.008)	2.5 (.098) ± .20 (.008)	0.50 (.02) ± .25 (.010)	N/A	

See Capacitance Value Chart below for thickness dimension.
+ For extended values 1210 case sizes - solder reflow only.

Electrical Parameters

As detailed in the KEMET Surface Mount Catalog F3102 for C0G, with following specific requirements based on room temperature (25°C) parameters:

- Operating Range: -55°C to +125°C, with no-bias capacitance shift limited to ± 30 PPM/°C over that range.
- Insulation Resistance (IR) measured after 2 minutes at rated voltage @ 25°C: Limit is 1000 megohm microfarads or 100GΩ, whichever is less.
- Capacitance and Dissipation Factor (DF) measured at the following conditions.
  Capacitance - 1 kHz and 1 vrms if capacitance >1000 pF
  1 MHz and 1 vrms if capacitance ≤ 1000 pF
  DF Limit is 0.1%.

Soldering Process

These components are suitable for wave and reflow soldering. All parts incorporate the standard KEMET barrier layer of pure nickel, with an overplate of pure tin to provide excellent solderability as well as resistance to leaching.

Marking

These chips will be supplied unmarked. However, marking is available as an extra cost option.

Qualification/Certification

AEC-Q200 Rev. C - Automotive

RoHS 6 - 100% tin termination

RoHS Compliant KEMET CHARGED

C 0805 C 103 K 3 G A C

Style
C - Ceramic

Size Code
0402, 0603, 0805, 1206, 1210

Specification
C - Standard

Capacitance Code, pF
First two digits represent significant figures.
Third digit specifies number of zeros. 100 pF = 101.
(Use “9” for 1.0 through 9.9 pF)
(Use “8” for 0.1 through .99 pF)

Capacitance Tolerance
F = ±1%
G = ±2%
J = ±5%
K = ±10%
M = ±20%

Voltage
3 = 25V

Temperature Characteristic
Designated by Capacitance Change Over Temperature Range
G = C0G (NP0) (±30 PPM/°C)

Failure Rate Level
A = Not Applicable

End Metallization
C = Standard (Tin-plate nickel barrier)

Capacitance Value						
Capacitance Values (pF)	**KEMET Part Number**	**Voltage**	**Capacitance Tolerance**	**Thickness mm**	**Qty 7” Reel**	**Qty 13” Reel**
470	C0402C471(1)3GAC	25	F,G,J,K,M	.50 ± .05	10,000	50,000
560	C0402C561(1)3GAC	25	F,G,J,K,M	.50 ± .05	10,000	50,000
680	C0402C681(1)3GAC	25	F,G,J,K,M	.50 ± .05	10,000	50,000
820	C0402C821(1)3GAC	25	F,G,J,K,M	.50 ± .05	10,000	50,000
1000	C0402C102(1)3GAC	25	F,G,J,K,M	.50 ± .05	10,000	50,000
2200	C0603C222(1)3GAC	25	F,G,J,K,M	.80 ± .10	4,000	10,000
2700	C0603C272(1)3GAC	25	F,G,J,K,M	.80 ± .10	4,000	10,000
3300	C0603C332(1)3GAC	25	F,G,J,K,M	.80 ± .10	4,000	10,000
3900	C0603C392(1)3GAC	25	F,G,J,K,M	.80 ± .10	4,000	10,000
4700	C0603C472(1)3GAC	25	F,G,J,K,M	.80 ± .10	4,000	10,000
5600	C0603C562(1)3GAC	25	F,G,J,K,M	.80 ± .10	4,000	10,000
6800	C0603C682(1)3GAC	25	F,G,J,K,M	.80 ± .10	4,000	10,000
8200	C0603C822(1)3GAC	25	F,G,J,K,M	.80 ± .10	4,000	10,000
10,000	C0603C103(1)3GAC	25	F,G,J,K,M	.80 ± .10	4,000	10,000
4700	C0805C472(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
5600	C0805C562(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
6800	C0805C682(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
8200	C0805C822(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
10,000	C0805C103(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
18,000	C0805C183(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
22,000	C0805C223(1)3GAC	25	F,G,J,K,M	.90 ± .10	4,000	10,000
33.000	C0805C333(1)3GAC	25	F,G,J,K,M	1.25 ± .20	3,000	10,000
18,000	C1206C183(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
22,000	C1206C223(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
33,000	C1206C333(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
47,000	C1206C473(1)3GAC	25	F,G,J,K,M	.90 ± .10	4,000	10,000
68,000	C1206C683(1)3GAC	25	F,G,J,K,M	1.20 ± .15	2,500	10,000
100,000	C1206C104(1)3GAC	25	F,G,J,K,M	1.60 ± .20	2,000	8,000
22,000	C1210C223(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
27,000	C1210C273(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
33,000	C1210C333(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
47,000	C1210C473(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
68,000	C1210C683(1)3GAC	25	F,G,J,K,M	.78 ± .10	4,000	10,000
100,000	C1210C104(1)3GAC	25	F,G,J,K,M	1.00 ± .10	2,500	10,000
220,000	C1210C224(1)3GAC	25	F,G,J,K,M	2.10 ± .20	2,000	8,000

(1) Insert capacitance tolerance as shown: F = ±1%; G = ±2%; J = ± 5%; K = ±10% or M = ±20%.

In general, the information in the KEMET Surface Mount catalog F3102 applies to these capacitors. The information in this bulletin supplements that in the catalog.